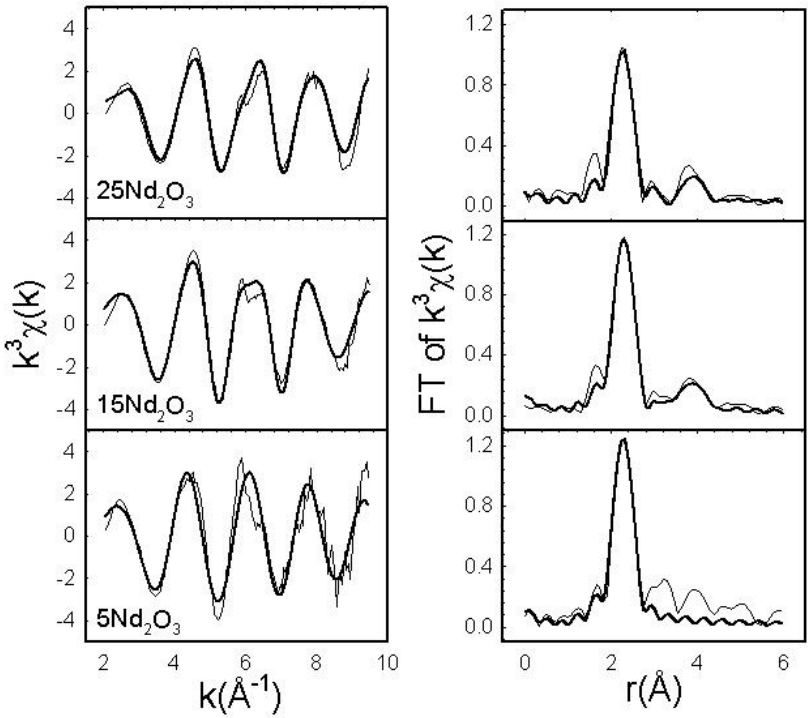
*DMR-0305202*

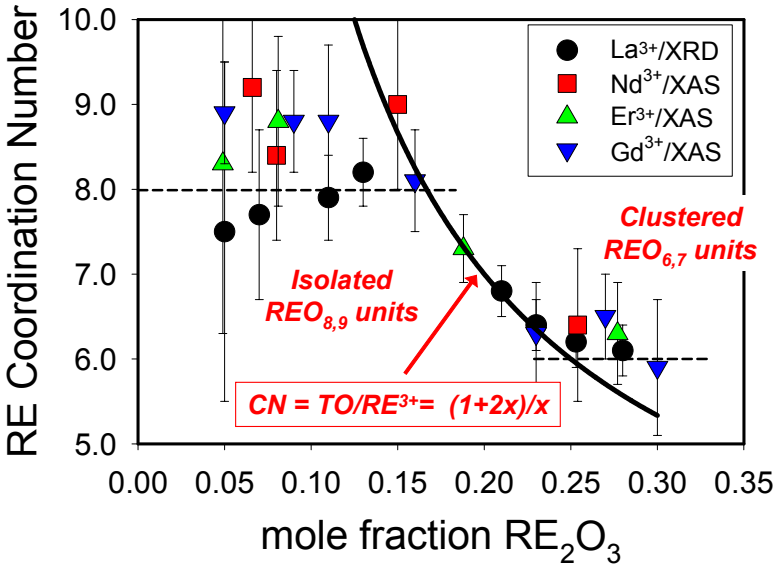
# *The Effects of Rare Earth Coordination Environments on the Optical and Magnetic Properties of Phosphate Glasses*

*Richard K. Brow*
*Dept. of Ceramic Engineering, U. Missouri-Rolla*
*Gaya Kanishka Marasinghe*
*Dept. of Physics, University of North Dakota*

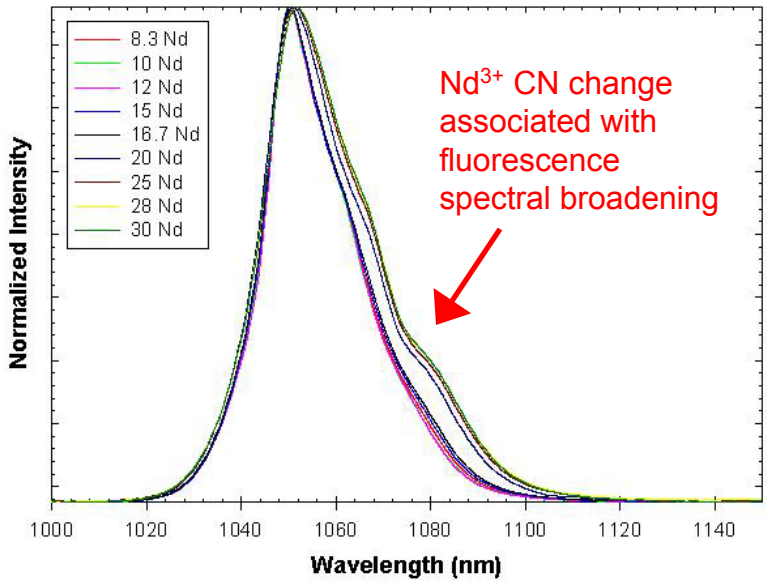
**Goal**: Develop a quantitative understanding of the relationships between the composition, structure, and properties (optical and magnetic) of novel rare earth phosphate glasses.

X-ray absorption analyses of Nd-phosphate glasses



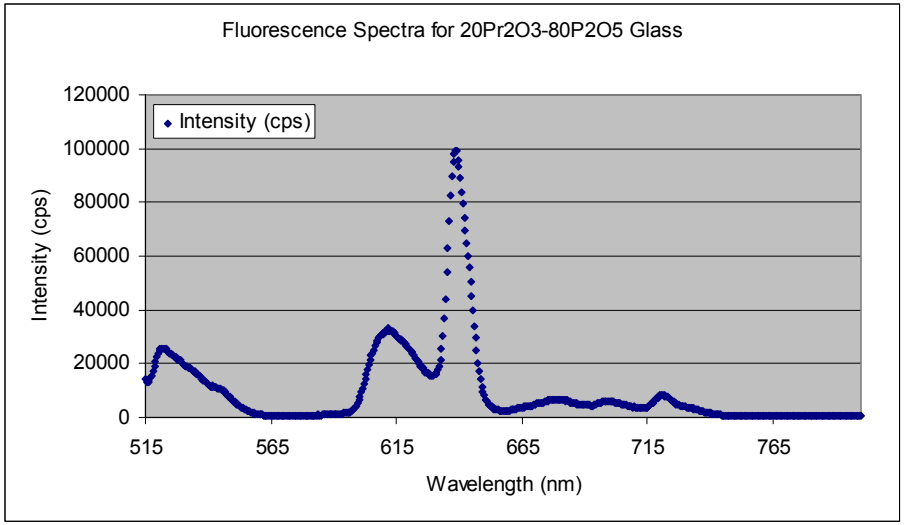




The coordination environment of rare earth ions in phosphate glasses depends on composition (left) and will affect glass properties, including the fluorescence spectra (right).



**Educational Outreach-**

*High school students participated in a week-long 'Materials Camp' in July 2004 at the University of Missouri-Rolla. One team (top right) prepared and characterized fluorescent glasses (bottom right), under the mentorship of Nathan Wyckoff, a graduate student in Materials Science & Engineering supported by the NSF (DMR-0305202)*



*Emission spectra from Pr-doped glasses prepared by high school students attending the UMR Materials Camp.*